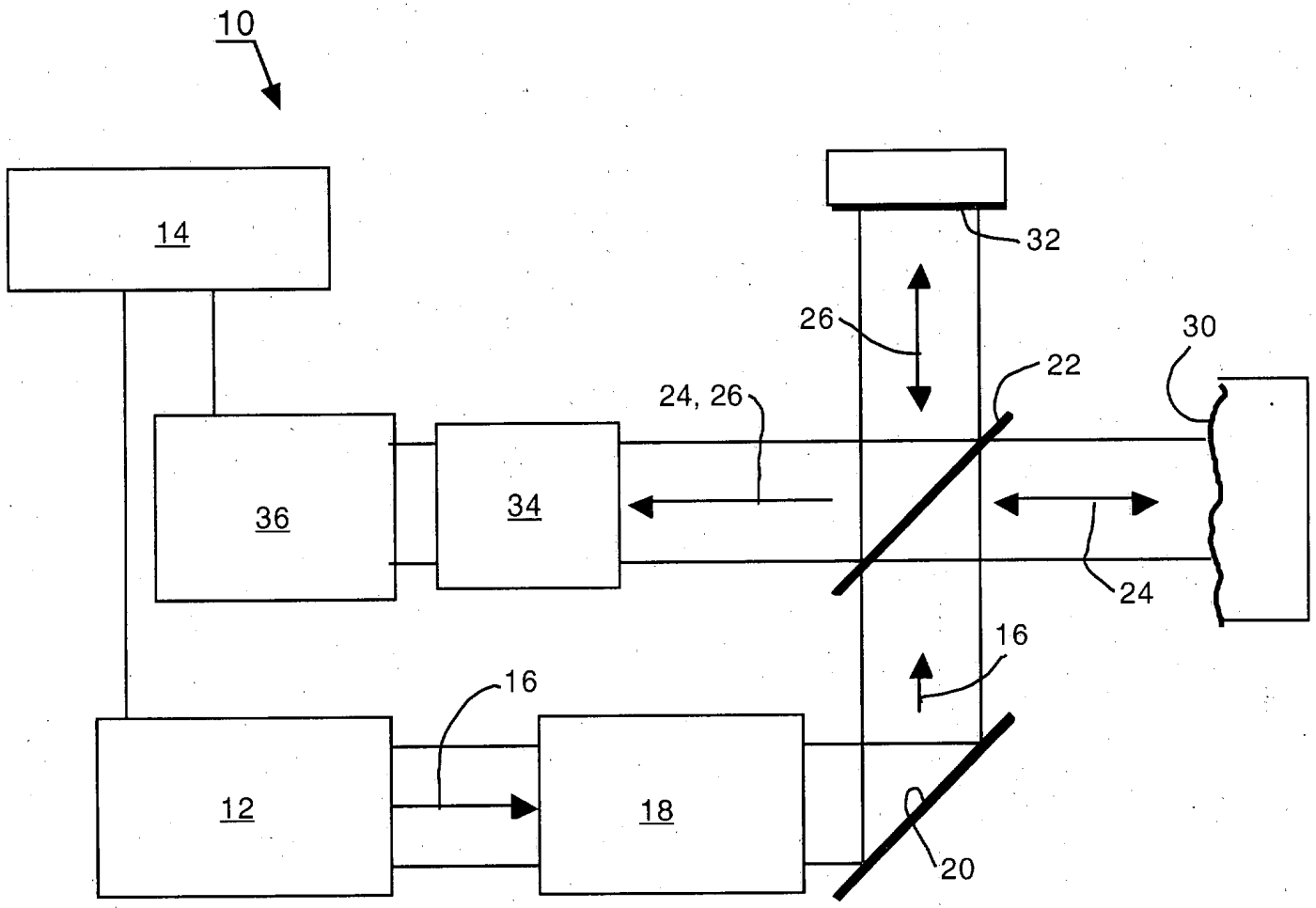

FIG. 1

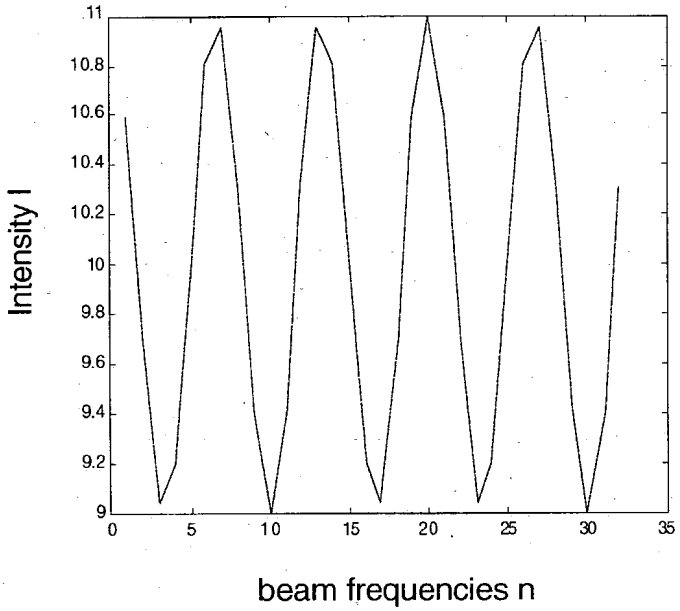
Intensity I
11
10.8
10.6
10.4
10.2
10
9.8
9.6
9.4
9.2
9
0
5
10
15
20
25
30
35
beam frequencies n

FIG. 2

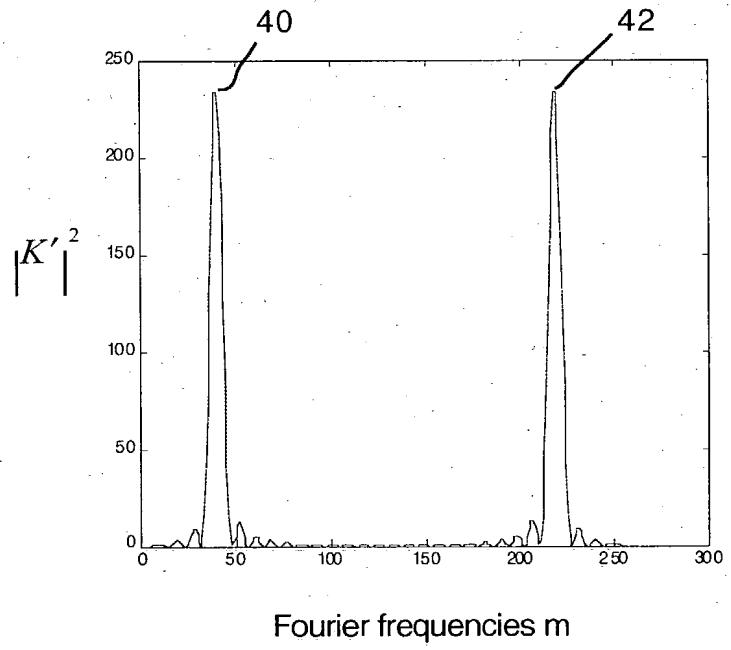
40
42
$|K'|^2$
250
200
150
100
50
0
0
50
100
150
200
250
300
Fourier frequencies m

FIG. 3

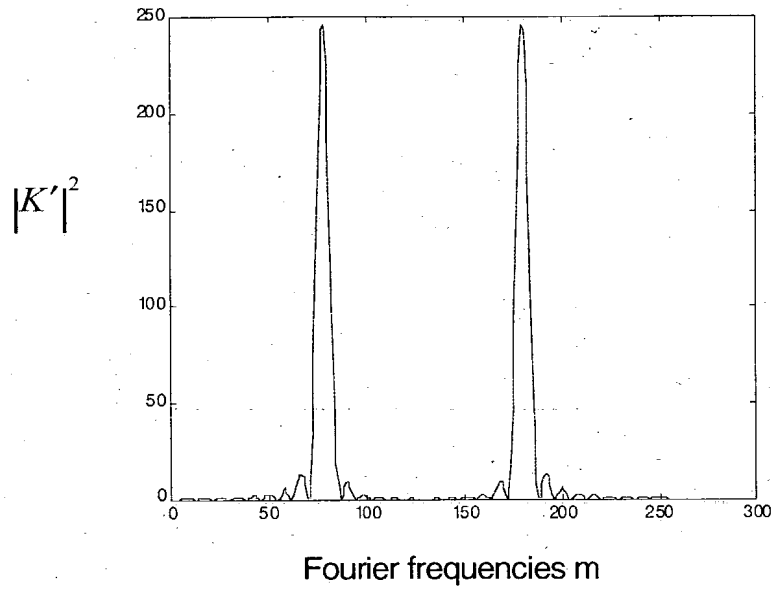
$|K'|^2$
250
200
150
100
50
0
0
50
100
150
200
250
300
Fourier frequencies m

FIG. 4

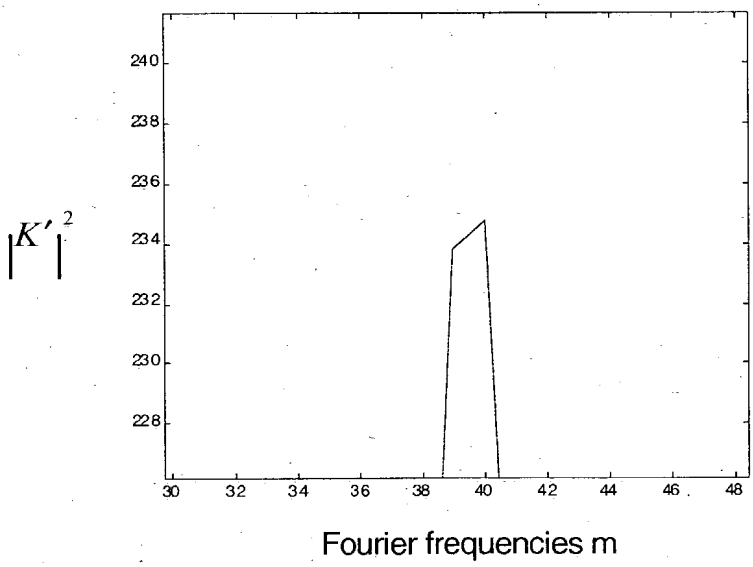
$|K'|^2$
240
238
236
234
232
230
228
30
32
34
36
38
40
42
44
46
48
Fourier frequencies m

FIG. 5

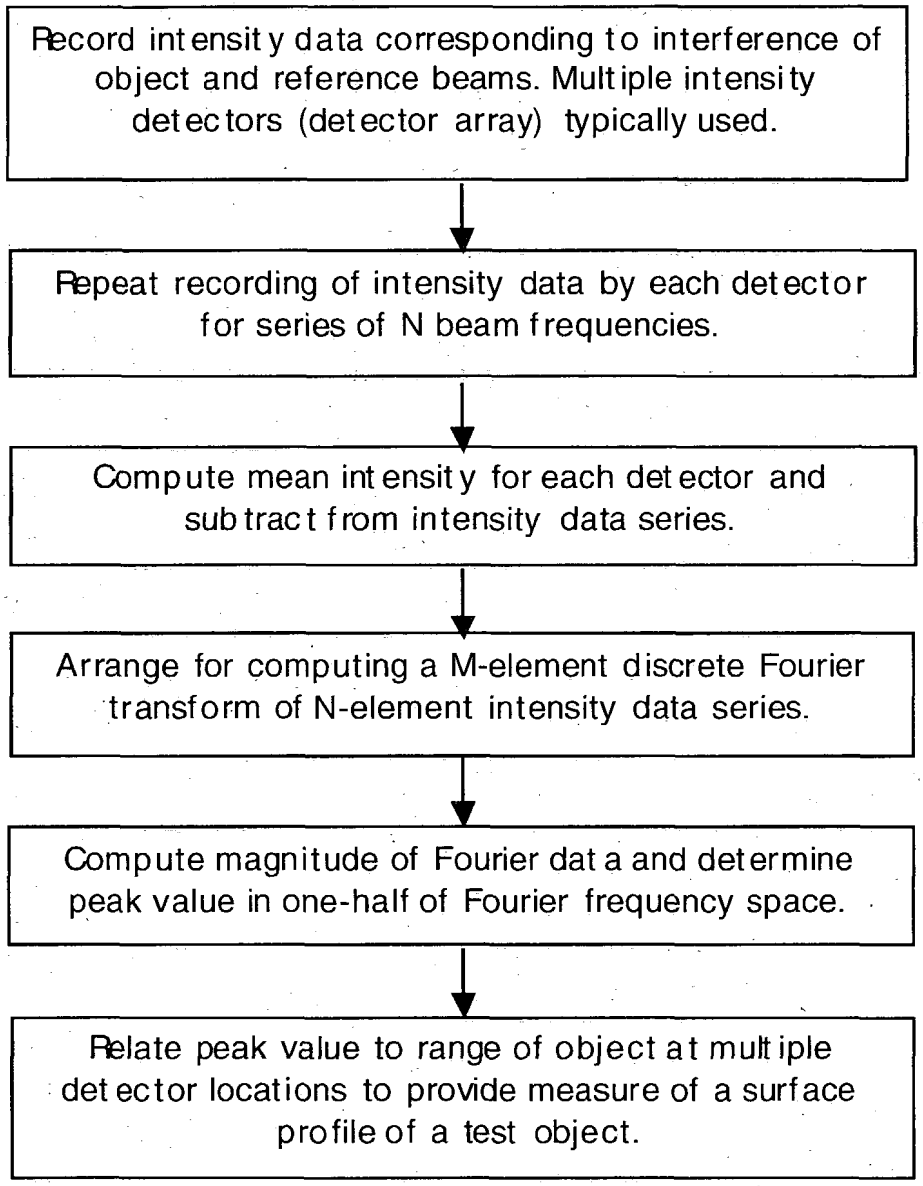
Record intensity data corresponding to interference of object and reference beams. Multiple intensity detectors (detector array) typically used.
Repeat recording of intensity data by each detector for series of N beam frequencies.
Compute mean intensity for each detector and subtract from intensity data series.
Arrange for computing a M-element discrete Fourier transform of N-element intensity data series.
Compute magnitude of Fourier data and determine peak value in one-half of Fourier frequency space.
Relate peak value to range of object at multiple detector locations to provide measure of a surface profile of a test object.

FIG. 6

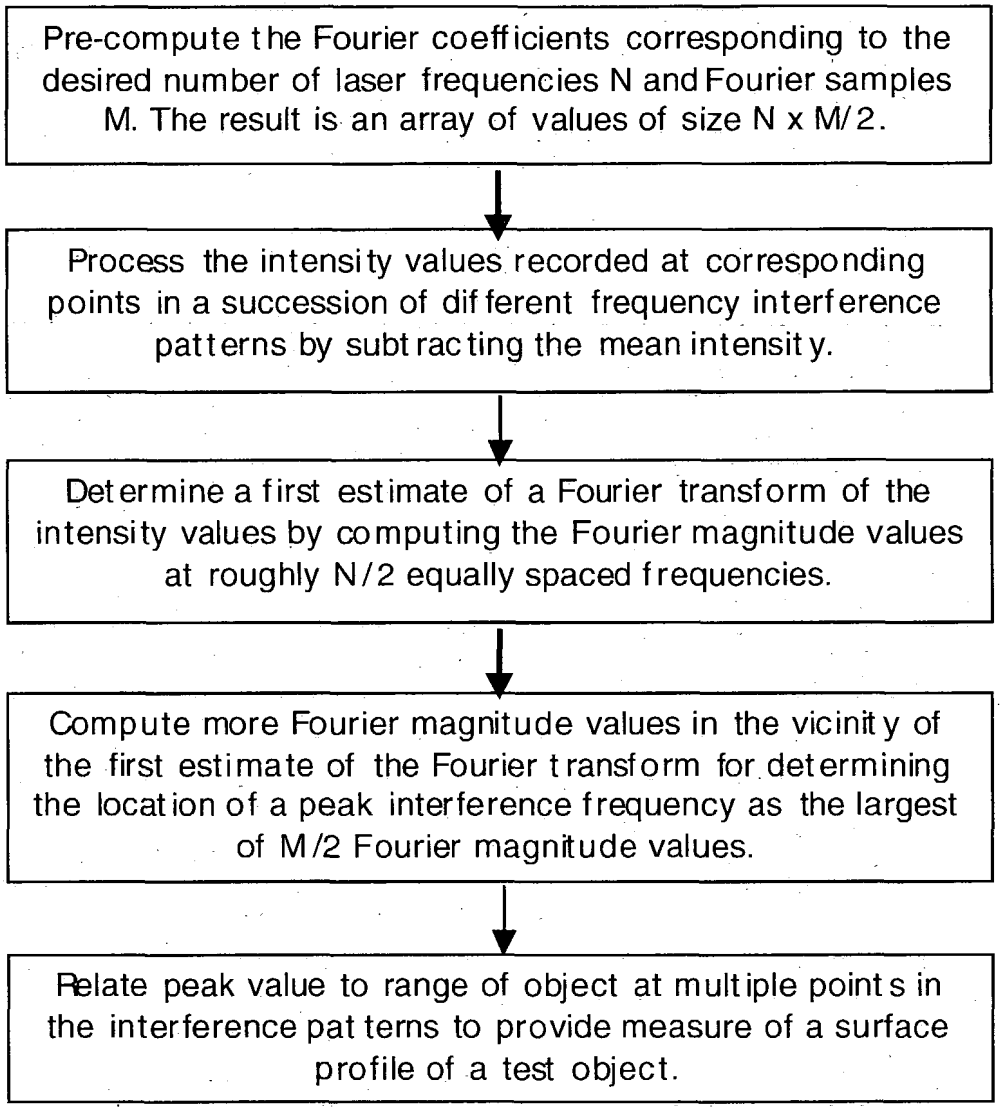
Pre-compute the Fourier coefficients corresponding to the desired number of laser frequencies N and Fourier samples M. The result is an array of values of size N x M/2.
Process the intensity values recorded at corresponding points in a succession of different frequency interference patterns by subtracting the mean intensity.
Determine a first estimate of a Fourier transform of the intensity values by computing the Fourier magnitude values at roughly N/2 equally spaced frequencies.
Compute more Fourier magnitude values in the vicinity of the first estimate of the Fourier transform for determining the location of a peak interference frequency as the largest of M/2 Fourier magnitude values.
Relate peak value to range of object at multiple points in the interference patterns to provide measure of a surface profile of a test object.

FIG. 7